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## **Abstract**

The Sustainable Development Goals [SDGs] have specific aims to reduce maternal mortality and achieve gender equality. Whilst a significant amount of literature focuses on lower-income countries that have higher mortality and morbidity rates than the United Kingdom [UK], the UK must not be complacent. Maternal mortality and morbidity can still be improved nationally by critically evaluating whether the almost ubiquitous use of interventions in obstetric units is a contributory factor. Labour augmentation with oxytocin is not without risk and this therefore raises the question why maternity care is not incorporated into the gender equality goals in the UK. At its most basic level it could lead to a lack of informed consent, but is influenced by the risk discourse, changing epidemiology of women and socio-cultural norms.

## **Key words**

SDG; Too Much Too Soon; augmentation; physiological birth; risk; mortality

## **Key points**

- Oxytocin augmentation is widespread, yet women are not always informed of its risks.
- Definitions on active labour lack international consensus, making international comparisons on dystocia challenging.
- The use of the partogram is based on weak evidence yet it influences the use of oxytocin.

- Although the UK has a lower maternal mortality rate than other countries, more needs to be done to prevent morbidity and mortality from '*too much, too soon*'.
- Midwives require support, confidence, and experience to promote physiological births.
- The risk discourse is inadvertently and ironically increasing the likelihood of interventions.

## **Introduction and background**

The World Health Organization [WHO] (2019a) reported a 38% reduction in worldwide maternal mortality rate between 2000-2017 and a 50% reduction in neonatal mortality rate between 1990-2018 (WHO 2019b). Whilst this is a positive improvement, it still falls below the Millennium Development Goal target of a 75% reduction in maternal mortality by 2015 (WHO 2015), which has led to the revised Sustainable Development Goals [SDGs] (UN 2015a). The highest maternal and neonatal mortality rates continue to be in lower-income countries, in particular Sub-Saharan Africa accounts for 66% of maternal deaths (WHO 2019c), whereas the maternal mortality in high-income countries is lower. In most European countries the maternal mortality rate is under 10:100,000 (Euro-Peristat 2018), with the UK reporting 9.2:100,000 (Knight *et al.* 2019). Despite the criticism that mortality worldwide cannot be adequately measured due to differing definitions and reporting methods (Bouvier-Colle *et al.* 2012; Euro-Peristat 2018; WHO 2019c), the inadequacies would not preclude high-income countries having the lowest rates. Whilst high-income countries can be praised for maternity care provision that results in low mortality rates, criticism has been made of over-medicalised practice, where

non-evidence based care causes harm and instigates disrespect and abuse (Shaw *et al.* 2016); this care has become known as ‘*too much, too soon*’ [TMTS].

This paper will critically explore the impact of labour augmentation with oxytocin from the perspective of TMTS, questioning whether its widespread usage is helpful in meeting the global targets set out in the SDGs (UN 2019). Although it is acknowledged that there are times when augmentation is necessary, it needs to be considered why a potentially harmful drug, whose effects are not fully understood, is being administered so readily for a physiological process and whether it is in line with global goals and guidance. The use of oxytocin as an ecobolic agent varies from country to country (Seijmonsbergen-Schermer *et al.* 2020), as such it is not unreasonable to question whether it is always necessary and consider the factors that influence its extensive use.

### **SDGs, the UK and augmentation**

Women are marginalised worldwide, yet an educated, healthy and safe mother will enable her child to thrive, having a positive causal effect on future generations (Save the Children 2015), thus global initiatives relating to mothers and children are necessary. Both the unsuccessful Millennium Development Goals and the subsequent SDGs incorporate goals relating to maternal and child health, specifically a drive to reduce the maternal mortality rate, asserting the importance of skilled birth attendants (UN 2019). However, it should be noted that a large proportion of the preventable deaths in the UK are outside of the intrapartum period, with suicide being the leading cause of maternal death up to a year postpartum (Knight *et al.* 2019). Additionally, the UK maternal mortality rate is challenged by race, with Black,

Asian and minority ethnic women having a higher mortality rate; black women only account for 4% of births yet they are five times more likely to die than white women (Knight *et al.* 2019). Thus, whilst the SDGs maternal mortality reduction target focuses on the use of skilled birth attendants, it is not specific to UK care. The UK needs review why Black, Asian and minority ethnic women are dying and develop appropriate goals.

The focus on reducing global mortality is undoubtedly necessary, but it should be recognised that high income countries with low rates are challenged in preventing TMTS and need improved focus on the *Gender Equality* SDG. Gender inequality is evident worldwide. Women are disadvantaged in education, financial and political status (UN 2015b). The key indicator for achieving this SDG (legal frameworks to prevent discrimination) already exists in the UK and the Department for International Development (2019) has outlined further UK specific objectives. However, none of these objectives relate to maternal health, where it could be challenged that discrimination based on gender still exists. Unnecessary labour augmentation could be presented as an example of discrimination, where a need to accelerate a physiological process shows that intrapartum care is based on medical pathology, supporting Hill's (2019) assertion that women's bodies have been presented unfit for childbirth. In addition, poorly consented labour augmentation has been recognized as an example of violating women's rights (Windau-Melmer 2013). NICE (2014) states a woman should be informed that oxytocin administration will shorten labour but change no other outcomes. It is therefore worthwhile considering the possible effects of oxytocin and whether NICE (2014) is promoting inadequate consent, thus violating the rights of women. In view of this, the SDGs do not go far enough in their

indicators for gender equality- there are no targets specifically aimed at defending the rights of women in maternity.

### **Effects of oxytocin augmentation**

Oxytocin administration is recommended by WHO (2014) and NICE (2014) to augment labour when there is confirmed delay. However, oxytocin is a potentially dangerous drug, responsible for maternal and fetal deaths prior to the standardization of administration (Oláh and Steer 2015). Clark *et al.* (2009) suggest that even with current technology, it is not possible to prevent harm, as there is no method of accurately measuring its effects. Whilst it may be argued that statement is imprecise, with internal tocodynamometry considered to be the most sensitive method of monitoring contractions (Cohen 2017), it is not without risk (Bakker *et al.* 2010). Bakker *et al.*'s. (2013) Cochrane Review concluded that there is insufficient evidence to recommend the use of one form of tocodynamometry over another.

According to the Cochrane Review of Bugg *et al.* (2013), oxytocin administration for progress delay in spontaneous labour, compared to none or delayed administration, made no difference to the number of caesarean sections, nor adversely affected mother or baby, whilst shortening the length of labour by two hours. Research succeeding this has explored the potential adverse effects of oxytocin. A large (n=1,441,712) Norwegian population-based study, spanning 40 years (Al-Zirqi *et al.* 2015), found an increase in uterine rupture over time, associated in part to an increase in augmentation with oxytocin for both nulliparous and multiparous women. Labour augmentation with oxytocin has also been associated with increased labour

pain (Khajehel 2017), less resting time between contractions (Aye *et al.* 2014) and hyperstimulation, along with associated fetal asphyxia (WHO 2014).

Further research has explored long-term effects of oxytocin, that does not appear to be considered in Bugg *et al.* (2013). Gu *et al.*'s. (2016) longitudinal study examining the long-term effects of oxytocin administration, found a correlation with oxytocin use and a reduction in breastfeeding rates. This supported the pilot study of Fernández *et al.* (2012), suggesting that intrapartum oxytocin disturbs the neonatal suckling reflex and therefore potentially affects breastfeeding success. In addition to this, Gu *et al.* (2016) found a positive correlation between oxytocin and postpartum depression. It is important to acknowledge that the findings were correlational not causal, however they are strengthened by Kroll-Desrosiers *et al.*'s. (2017) population-based study, which found an increased risk of postpartum depression and anxiety with intrapartum oxytocin use. Whilst the study compared a large data set (n=46,432) it was limited by the lack of data analysis on the indications for oxytocin and did not consider family history of mental health. In contrast, Takács *et al.* (2018) discredits both, finding exogenous oxytocin caused a lower risk of postpartum depression. Whilst all the studies have limitations, these are important possible associations to consider when the negative impact of postpartum depression on the mother-infant dyad, breastfeeding and the child's future mental health is well known.

### **Extent of oxytocin augmentation**

Despite the known and possible adverse effects of oxytocin for labour augmentation it is frequently administered. De Jonge *et al.*'s. (2017) population-based study reported 34.3% of nulliparous women birthing in an obstetric unit in England were

augmented. Recent statistics are absent. The National Health Service [NHS] (NHS Digital 2019) maternity statistics do not report labour augmentation and recent audits have identified that data in many trusts has not met quality standards (NMPA Project Team 2019), a surprising finding considering the UK is highly regarded for maternity data collection (Knight *et al.* 2014). Other high-income countries have also reported high rates of augmentation. Seijmonsbergen-Schermer *et al.*'s. (2020) multi-national cross-sectional study accounted for varying data quality and found labour augmentation in nulliparous women ranging from 21.7% (Ireland) to 70.9% (Finland).

### **The partogram and its relationship to progression**

Evidence-based guidelines have been incorporated into WHO's (2016:16) "Framework for the quality of maternal and newborn health", reinforcing Miller *et al.*'s. (2016) suggestion that guidelines support prevention of TMTS. However, this is reliant on the guidelines being created from strong evidence. There is a need for a standardised definition of active labour, physiological labour progress and the use of a partogram in defining dystocia. The UK utilizes the NICE (2014:19) definition of active labour- "progressive cervical dilation from 4cm" with regular painful contractions. Aside from this definition relying on the assumption that all women request a vaginal examination (a practice itself which requires further research as to its efficacy (Downe *et al.* 2013)), there is no clear graded evidence for this definition (NICE 2006). Abalos *et al.*'s. (2018) systematic review studying spontaneous labour duration in low-risk women, reports global ambiguity in the definition of active labour throughout the 37 studies reviewed from low, middle, and high-income countries. Suggested cervical dilatation ranged from 1.5cm to 5cm, thus Abalos *et al.* (2018)



propose that without a worldwide definition of active labour, expected labour progress cannot be defined. Despite global ambiguity, WHO (2014) strongly recommend the use of a four-hour action line partogram for women in all settings, advising oxytocin for augmentation when that line is crossed (however they acknowledge this recommendation is based on weak evidence and there is no universal definition for labour delay). More recently, WHO (2018) guidelines suggest progress in labour may not accelerate before 5cm dilation, anticipating this recommendation to decrease medical intervention, but an alternative partogram has not been published. Lavender *et al*'s. (2018) Cochrane Review, states effects of routine partogram use is uncertain and requires further research. However, Juhasova *et al*. (2018: 63) assert research for a partogram truly suited to physiological labour requires the involvement of large numbers of women that have no obstetric intervention, stating "in contemporary obstetrical care, such an ideal situation is an illusion". This suggests reducing TMTS through research exploring labour physiology is limited. Despite this, it needs to be acknowledged that global guidelines surrounding labour augmentation are built on insubstantial evidence and this needs to be addressed.

### **The impact of epidemiology on the risk discourse**

The epidemiology of pregnant women in the UK presents a challenge. Whilst births for women under 20 have more than halved in England and Wales over the last 20 years, births for women over 30 have steadily increased (NHS Digital 2019). Increasing age is associated with a rise in obesity (PHE 2019), diabetes, and caesarean sections (NHS Digital 2019; NHS Digital 2020). Obesity can have a

resultant negative impact on the mother, foetus, and the child's future health (Davies 2015). Women over the age of 40, like obese and diabetic women, are placed on a 'high risk' care pathway (NICE 2008). Whilst the concept of risk discourse is widely discussed in maternity care (Scamell *et al.* 2019), it is too broad to address within this paper – however it needs to be acknowledged that the concept of risk could challenge preventing TMTS in the UK. An increasing trend of 'high-risk' pregnancies would theoretically result in a high percentage of obstetric unit births. However, Walsh *et al.* (2020) state approximately 45% of women in England are deemed 'low risk' at the end of their pregnancy, women who should be supported to birth in a midwifery unit or at home, where interventions are minimal in comparison to an obstetric unit (Birthplace in England Collaborative Group 2011). Nevertheless, Walsh *et al.* (2020) report that in 2012 only 11% of births in England occurred in a midwifery unit and 2% at home. Therefore, it could be postulated that it is not just epidemiology of pregnant women that presents a challenge to reducing TMTS, but also additional factors such as the UK maternity care model and the ability of those working in it to promote physiological processes.

### **Physiologic birth – rhetoric or achievable reality?**

The Lancet series on Midwifery included a comprehensive review of midwifery (Renfrew *et al.* 2014), presenting a multi-dimensional framework for quality care, including components such as promotion of physiology and competent care providers. The framework has since been used to influence various policies and reports (NMC 2019a; UNFPA 2014; Renfrew and Hoope-Bender 2019) highlighting the importance of available, accessible and acceptable health care professionals.

Renfrew *et al.* (2014: 1131) highlights that the midwife promotes “normal processes”. However, Wagner (2001) asserts healthcare professionals who have only experienced high-intervention care, will not be able to reflect on its impact and change practice accordingly. This stance is supported by Coddington *et al.*'s. (2020) qualitative study, exploring how exposure to homebirths affects the attitudes of midwives. Coddington *et al.* (2020) observed that homebirth enables midwives to better understand physiological birth, which subsequently positively changed their practice in an obstetric unit. Although carried out in Australia, the similarities in the high volume of obstetric unit births indicate findings are transferable to the UK. Therefore, it needs to be considered if current UK maternity care enables midwives to promote physiology to reduce interventions, such as labour augmentation. If not, then it could be questioned if the Nursing and Midwifery Council [NMC] (2019a) standards, that include optimising physiological processes as part of the key themes, can be truly upheld. If midwives are not competent in, or supported to promote physiology, this could have resultant detrimental effects on the education of student midwives. In essence, the disembodied normality paradigm replaced by the ‘superior’ obstetric knowledge (Spendlove 2018), perpetuated as a cultural norm. Education institutions will be challenged to find ways to ensure students experience physiologic birth as outlined by the NMC (2019b). It could be proposed that until the structure of UK maternity care changes and there is greater access to and utilization of midwifery units and homebirths for women, midwives, and students, that the reduction of TMTS is going to be limited.

## **Socio-cultural perceptions**

To change the structure of maternity care, there needs to be consideration of how policy, midwifery support and societal norms can promote this. Sandall *et al's.* (2016) Cochrane Review identified that midwifery-led continuity of care decreased intervention rates. This has been used to promote policy initiatives, such as the establishment of continuity of care teams in all NHS trusts (Cumberlege 2016). A change of the maternity care model nationwide which will promote choice, reduce interventions and theoretically utilize non-obstetric settings is to be praised, but midwives must be supported in providing quality care to women. Well publicised concerns regarding midwifery care (Kirkup 2015) has resulted in a focus on public safety. The subsequent withdrawal of midwifery supervision and absence of midwifery leadership within the NMC (RCM 2020) may have resulted in a midwifery culture where midwives have been exposed to physiological birth, yet do not feel supported to promote it. However, the appointment of a Chief Midwifery Officer aiming to refresh the perception of midwifery (NHS England 2019), may assist in changing this with positive leadership. Additionally, a well-publicised Chief Midwifery Officer may promote a change in societal norms surrounding childbirth.

Teijlingen *et al.* (2009) suggest high-income countries separate birth from normal life, which reduces understanding of physiology and results in acceptance that birth, as portrayed by the mass media, is dangerous and requires technology. This is supported by De Benedictis *et al's.* (2018) content analysis of a popular maternity television series that reported 77% of births depicted a procedure occurring, of which 91% did not show facilitation of choice. Whilst there is no specific reference to labour augmentation, the study highlights media influences on childbirth. It could be theorised that socio-cultural norms surrounding childbirth and depicted in the media

could be one of the challenges in preventing TMTS. If it is continually conveyed to women that physiological birth is a rare occurrence and consent is not required, they may be easily accepting of labour augmentation.

## **Conclusion**

Overall, it is apparent there are global inconsistencies and evidence of extensive use of oxytocin for labour augmentation, therefore it is necessary to consider how this can be reduced. The immediate and long-term effects are not always understood or appreciated by maternity services, which has impacted true informed choice.

Although it is understandable that the focus of the SDGs tend to concentrate on maternal mortality rate in low-income countries, the UK should not be complacent.

Extensive research should be carried out into the long-term effects of the UK oxytocin administration regimens, which could contribute to international research exploring progress and dystocia in physiological birth. Without stronger evidence, robust guidelines cannot be produced and used effectively by clinicians or women.

The changing of educational standards and appointment of a midwifery leader should be the impetus for a renewed focus on physiological birth; students and qualified midwives need to be supported in experiencing and promoting this. Finally, there should be a concerted public health initiative to educate women on the benefits of physiological birth and risks of seemingly innocuous interventions. It is important to acknowledge the limitations of this paper which warrant further consideration, including: the risk discourse, obstetric education and ethnicity, which will be essential to prevent harm to mothers and infants.

Augmentation of labour is sometimes necessary for the health and wellbeing of mother and foetus, however it is essential that practitioners have an awareness of the iatrogenic impact of oxytocin and the contributory factors that increase its use. In order to ensure equality, women deserve the right to make choices based on strong evidence, with care provided by practitioners who can optimise physiology, otherwise TMTS will become a ubiquitous feature of maternity care.

### **Reflective questions**

How do you provide informed choice for labour augmentation?

Do you feel that there is sufficient support to challenge unnecessary intervention?

Is physiological birth always respected within your trust?

Has the partogram helped or hindered you in providing respectful care?

Do you feel that the risk discourse is influencing your philosophy on midwifery care?

## References

Abalos E, Oladapo OT, Chamillard M, Diaz V, Pasquale J, Bonet M, Souza JP, Gülmezoglu AM. 2018. Duration of spontaneous labour in 'low-risk women with 'normal' perinatal outcomes: A systematic review. *Eur J Obstet Gynaecol Reprod Biol.* 223:123-132.

Al-Zirqi I, Stray-Pedersen B, Forsén L, Daltveit AK, Vangen S. 2015 Uterine rupture: Trends over 40 years. *Br J Obstet Gynaecol.*123:780-787.

Aye CYL, Redman CWG, Georgieva A. 2014 The effect of augmentation of labour with syntocinon on the fetal CTG using objective computerised analysis: A nested case-control study. *Eur J Obstet Gynaecol Reprod Biol.*176:112-118.

Bakker JJH, Verhoeven CJM, Janssen PF, van Lith JM, van Oudgaarden ED, Boemenkamp KWM, Papatsonis DNM, Mol BWJ, van der Post JAM 2010 Outcomes after internal versus external tocodynamometry for monitoring labor. *N Engl J Med.* 362:137-142.

Bakker JJH, Janssen PF, van Halem K, van der Goes BY, Papatsonis DNM, van der Post JAM, Mol BWJ. 2013 Internal versus external tocodynamometry during induced or augmented labour. *Cochrane Database of Systematic Reviews* [Internet]. [cited 26 Aug 2020]; 3(CD006947). Available from:

<https://doi.org/10.1002/14651858.CD006947.pub3>

Birthplace in England Collaborative Group 2011 Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: The Birthplace in England national prospective cohort study. *Br Med J.* [Internet]. [cited 27 May 2020]

Available from:<http://dx.doi.org/10.1136/Br. Med. J...d7400>

Bouvier-Colle M-H, Mohangoo AD, Gissler M, Novak-Antolic Z, Vutuc C, Szamotulska K, Zeitlin J. 2012 What about the mothers? An analysis of maternal mortality and morbidity in perinatal health surveillance systems in Europe. *BJOG: Int J Obstet Gynaecol.* 119(7):880-890.

Bugg GJ, Siddiqui F, Thornton JG. 2013 Oxytocin versus no treatment or delayed treatment for slow progress in the first stage of spontaneous labour. *Cochrane Database of Systematic Reviews* [Internet]. [cited 08 May 2020]; 6(CD007123). Available from: <http://dx.doi.org/10.1002/14651858.CD007123.pub3>

Clark SL, Simpson KR, Knox E, Garite TJ. 2009 Oxytocin: New perspectives on an old drug. *Am J Obstet Gynaecol.* 200(1):35.e1-35.e6.

Coddington R, Catling C, Homer C. 2020 Seeing birth in a new light: The transformational effect of exposure to homebirth for hospital-based midwives. *Midwifery* [Internet]. [cited 09 June 2020];88(102755). Available from: <http://dx.doi.org/10.1016/j.midw.2020.102755>

Cohen WR. 2017 Clinical assessment of uterine contractions. *Int J Gynecol Obstet.* 139:137-142.

Cumberlege J. 2016 Better births: Improving outcomes of maternity services in England- A five year forward view for maternity care. London: NHS England.

Davies SC. 2015 Annual report of the Chief Medical Officer, 2014, the health of the 51%: Women. London: Department of Health.

De Benedictis S, Johnson C, Roberts J, Spiby H. 2018 Quantitative insights into televised birth: A content analysis of *One Born Every Minute*. *Crit Stud Media*



Commun [Internet]. [cited 09 June 2020];36(1):1-17. Available from:

<http://dx.doi.org/10.1080/15295036.2018.1516046> .

De Jonge A, Peters L, Geerts CC, Van Roosmalan JJM, Twisk JWR, Brocklehurst P, Hollowell J. 2017 Mode of birth and medical interventions among women at low-risk of complications: A cross-national comparison of birth settings in England and the Netherlands. PLoS ONE [Internet]. [cited 18 May 2020];12(7):e0180846. Available from: <http://dx.doi.org/10.1371/journal.pone.0180846>

Department for International Development 2019 Corporate report. Implementing the sustainable development goals [Internet]. [cited 27 May 2020] Available from:

<https://www.gov.uk/government/publications/implementing-the-sustainable-development-goals/implementing-the-sustainable-development-goals--2>.

Downe S, Gyte GML, Dahlen HG, Singata M. 2013 Routine vaginal examinations for assessing progress of labour to improve outcomes for women and babies at term.

Cochrane Database of Systematic Reviews [Internet]. [cited 19 May 2020];7(CD010088). Available from:

<http://dx.doi.org/10.1002/14651858.CD010088.pub2>

Euro-Peristat 2018 European perinatal health report: Core indicators of the health and care of pregnant women and babies in Europe in 2015 [Internet]. [cited 21 May 2020]. Available

from: [https://www.europeristat.com/images/EPHR2015\\_web\\_hyperlinked\\_Euro-Peristat.pdf](https://www.europeristat.com/images/EPHR2015_web_hyperlinked_Euro-Peristat.pdf)

Fernández IO, Gabriel MM, Martínez AM, Morillo AF-C, Sánchez FL, Costarelli V.

2012 Newborn feeding behaviour depressed by intrapartum oxytocin: A pilot study.

Acta Pædiatrica 101(7):749-754.

Gu V, Feeley N, Gold I, Hayton B, Robins S, Mackinnon A, Samuel, S, Carter S, Zelkowitz P. 2016 Intrapartum synthetic oxytocin and its effects on maternal well-being at 2 months postpartum. *Birth* 41(1):28-35.

Hill M. 2019 *Give birth like a feminist*. London: Harper Collins.

Juhasova J, Kreft M, Zimmermann R, Kimmich N. 2018 Impact factors on cervical dilatation in the first stage of labour. *J Perinat Med*.46(1): 59-66.

Khajehei M. 2017 Labor and beyond: The roles of synthetic and endogenous oxytocin in transition to motherhood. *Br J Midwifery* 25(4):230-238.

Kirkup B. 2015 *The report of the Morecambe Bay investigation*. London: The Stationary Office.

Knight M, Lewis G, Acosta CD, Kurinczuk, JJ 2014 Maternal near-miss case reviews: The UK approach. *BJOG: Int J Obstet Gynaecol*. 121(Suppl 4):112-116.

Knight M, Bunch K, Tuffnell D, Shakespeare J, Kotnis R, Kenyon S, Kurinczuk JJ editors. on behalf of MBRRACE-UK. 2019 *Saving lives, improving mothers' care - lessons learned to inform maternity care from the UK and Ireland confidential enquiries into maternal deaths and morbidity 2015-17*. Oxford: National Perinatal Epidemiology Unit.

Kroll-Desrosiers AR, Nephew BC, Babb JA, Guilarte-Walker Y, Simas TAM, Deligiannidis KM. 2017 Association of peripartum synthetic oxytocin administration and depressive and anxiety disorders within the first postpartum year. *Depression and Anxiety* 34(2):137–146.

Lavender T, Cuthbert A, Smyth RMD. 2018 Effect of partograph use on outcomes for women in spontaneous labour at term and their babies. *Cochrane Database of*

Systematic Reviews [Internet]. [cited 29 April 2020]; 8.(CD005461). Available from:  
<http://dx.doi.org/10.1002/14651858.CD005461.pub5>

Miller S, Abalos E, Chamillard M, Ciapponi A, Colaci D, Comandé, D, Diaz V, Geller S, Hanson C, Langer A, Manuelli V, Millar K, Marhason-bello I, Castro CP, Pileggi VN, Robinson N, Sker M, Souza JP, Vogel JP, Althabe F. 2016 Beyond too little, too late and too much, too soon: A pathway towards evidence-based, respectful maternity care worldwide. The Lancet 388: 2176-92.

NHS Digital 2019 NHS maternity statistics. England 2018-19. NHS England [Internet]. [cited 19 May 2020]. Available from:  
<https://files.digital.nhs.uk/D0/C26F84/hosp-epis-stat-mat-summary-report-2018-19.pdf>

NHS Digital 2020 Statistics on obesity, physical activity and diet, England, 2020. NHS England [Internet]. [cited 19 May 2020]. Available from:  
<https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-obesity-physical-activity-and-diet/england-2020/part-3-adult-obesity-copy>

NHS England 2019 Chief Midwifery Officer [Internet]. [cited 30 May 2020]. Available from:  
<https://www.england.nhs.uk/nursingmidwifery/chief-midwifery-officer/>

NICE (National Institute for Health and Clinical Excellence) (2006) Intrapartum care: Care of healthy women and their babies during childbirth. Final draft for consultation [Internet]. National Collaborating Centre for Women's and Children's Health:London [cited 01 June 2020]. Available from:  
<https://www.nice.org.uk/guidance/cg55/documents/intrapartum-care-consultation-full-guideline2>

NICE (National Institute for Health and Clinical Excellence) 2008 Antenatal care for uncomplicated pregnancies. Clinical guideline 62. London: NICE.

NICE (National Institute for Health and Clinical Excellence) 2014 Intrapartum care for health women and babies. Clinical guideline 190. London: NICE.

NMPA Project Team (National Maternity and Perinatal Audit) 2019 National Maternity and Perinatal Audit: Clinical report 2019- executive summary. Based on births in the NHS maternity services between April 2016 and 31 March 2017. London: RCOG.

NMC (Nursing and Midwifery Council) 2019a Standard of proficiency for midwives. London: NMC

NMC (Nursing and Midwifery Council) 2019b Realising professionalism: Standards for education and training. Part 3: Standard for pre-registration midwifery programmes. London: NMC.

Oláh SJK, Steer PJ. 2015 The use and abuse of oxytocin. *Obstet Gynaecol.*17:265-271.

PHE (Public Health England) 2019 Health of women before and during pregnancy: Health behaviours, risk factors and inequalities. An updated analysis of the maternity services dataset antenatal booking data. London: Public Health England.

Renfrew MJ, McFadden A, Bastos MH, Campbell J, Channon AA, Cheng NF, Silva DR, Downe S, Kennedy HP, Malata A, McCormick F, Wick L, Declercq E. 2014 Midwifery and quality care: Findings from a new-evidence framework for maternal and newborn care. *The Lancet* 384:1129-1145.

Renfrew M, Van Hoope-Bender P. 2019 Quality midwifery care for all women and infants: Learning from and using the Lancet series on midwifery. In: Downe S, Byrom S, editors. Squaring the circle: Normal birth research, theory and practice in a technological age. London: Pinter and Martin. p. 279-288.

RCM (Royal College of Midwives) 2020 RCM calls for change to law after no midwife appointed to NMC Council [Internet]. RCM [cited 30 May 2020]. Available from:<https://www.rcm.org.uk/news-views/news/2020/may/rcm-calls-for-change-to-law-after-no-midwife-appointed-to-nmc-council/>

Sandall J, Soltani H, Gates S, Shennan A, Devane D. 2016 Midwife-led continuity models versus other models of care for childbearing women. Cochrane Database of Systematic Reviews [Internet]. [cited 07 April 2020];4(CD004667). Available from: <https://dx.doi.org/10.1002/14651858.CD004667.pub5>

Save the Children 2015 The urban disadvantage. State of the world's mothers 2015 [Internet]. Fairfield: Save the Children; [cited 18 may 2019]. Available from:<https://www.savethechildren.org/content/dam/usa/reports/advocacy/sowm/sowm-2015.pdf>

Scamell M, Stone N, Dahlen H. 2019 Risk, safety, fear and trust in childbirth. In: Downe S, Byrom S, editors. Squaring the circle: Normal birth research, theory and practice in a technological age. London: Pinter and Martin, p.100-110.

Seijmonsbergen-Schermers AE, Van den Akker T, Rydahl E, Beeckman K, Bogaerts, A, Binfal L, Frith L, Gross MM, Misselwitz B, Hálfðánsdóttir B, Daly D, Corcoran P, Calleja-Agius J, Callejal N, Gatt M, Nilsen ABV, Declercq E, Gissler M, Heino A, Lindgren H, De Jonge A. 2020 Variations in use of childbirth interventions in 13 high-income countries: A multinational cross-sectional study. PLoS Med

[Internet]. [cited 09 June 2020];17(5): e1003103. Available

from:<http://dx.doi.org/10.1371/journal.pmed.1003103>

Shaw D, Guise J-M, Shah N, Gemzell-Danielsson K, Joseph KS, Levy B, Wong F, Woodd S, Main EK. 2016 Drivers of maternity care in high-income countries: Can health systems support woman-centred care? *The Lancet*. 366:2282-2295.

Spendlove Z 2018 Risk and boundary work in contemporary maternity care: tensions and consequences. *Health, Risk and Society* [Internet]. [cited 31 Jul 2020]; 20(1-2).

Available from: <https://doi.org/10.1080/13698575.2017.1398820>

Takács L, Seidlerová JM, Štěrbová Z, Čepický P, Havlíček J. 2018 The effects of intrapartum synthetic oxytocin on maternal postpartum mood: Findings from a prospective observational study. *Arch Womens Mental Health*. 22:485-491.

Teijlingen E, Wrede S, Benoit C, Sandall J, DeVries R. 2009 Born in the USA: Exceptionalism in maternity care organisation among high-income countries. *Sociol Res Online* [Internet]. [cited 21 May 2020];14(1):1-11. Available

from:<http://dx.doi.org/10.5153/sro.1860>.

UN (United Nations) 2015a Transforming our world: The 2030 agenda for sustainable development [Internet]. New York: UN. [cited 11 June 2020]. Available from:

<https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>

[cited 11 June 2020].

UN (United Nations) 2015b The Millennium Development Goals Report 2015

[Internet]. New York: UN. [cited 21 May 2020]. Available from:

[https://www.un.org/millenniumgoals/2015\\_MDG\\_Report/pdf/MDG%202015%20rev%20%28July%201%29.pdf](https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20%28July%201%29.pdf) [cited 21 May 2020].

UN (United Nations) 2019 Sustainable development goal 3: Ensure healthy lives and promote well-being for all at all ages [Internet]. New York: UN. [cited 02 June 2020].

Available from: <https://sustainabledevelopment.un.org/sdg3>

UNFPA (United Nations Population Fund) 2014 The state of the world's midwifery 2014. A universal pathway. A woman's right to health. New York: UNFPA.

Wagner M. 2001 Fish can't see the water: The need to humanize birth. Int J Gynaecol Obstet. 75(Suppl 1):S25-S37.

Walsh D, Spiby H, McCourt C, Coleby D, Grigg C, Bishop S, Scanlon M, Culley L, Wilkinson J, Pacanowski L, Thornton J. 2020 Factors influencing utilisation of 'free-standing' and 'alongside' midwifery units for low-risk births in England: A mixed methods study. Health Serv Delivery Res. [Internet]. [cited 02 June 2020]. 8(12).

Available from: <http://dx.doi.org/10.3310/hsdr08120>

Windau-Melmer T. 2013 A guide for advocating for respectful maternity care.

Washington: Futures Group Health Policy project.

WHO (World Health Organization) 2014 WHO recommendations for augmentation of labour. Geneva: WHO

WHO (World Health Organization) 2015 Health in 2015: From MDGs to SDGs – Maternal health [Internet]. Geneva: WHO;[cited 21 May 2020]. Available from:

[https://www.who.int/gho/publications/mdgs-sdgs/MDGs-SDGs2015\\_chapter4\\_snapshot\\_maternal\\_health.pdf?ua=1](https://www.who.int/gho/publications/mdgs-sdgs/MDGs-SDGs2015_chapter4_snapshot_maternal_health.pdf?ua=1)

WHO (World Health Organization) 2016 Standards for improving quality of maternal and newborn care in health facilities. Geneva: WHO.

WHO (World Health Organization) 2018 WHO recommendation on progress of the first stage of labour: Application of slow-yet-normal cervical dilatation patterns for labour management. Geneva: WHO.

WHO (World Health Organization) 2019a Maternal Mortality [Internet]. Geneva: WHO;[cited 21 May 2020]. Available from: <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>

WHO (World Health Organization) 2019b Newborns: reducing mortality [Internet]. Geneva: WHO;[cited 21 May 2020]. Available from: <https://www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality>

WHO (World Health Organization) 2019c Trends in maternal mortality 2000-2017. Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: WHO.